

Trend Study 25C-2-03

Study site name: Wildcat.

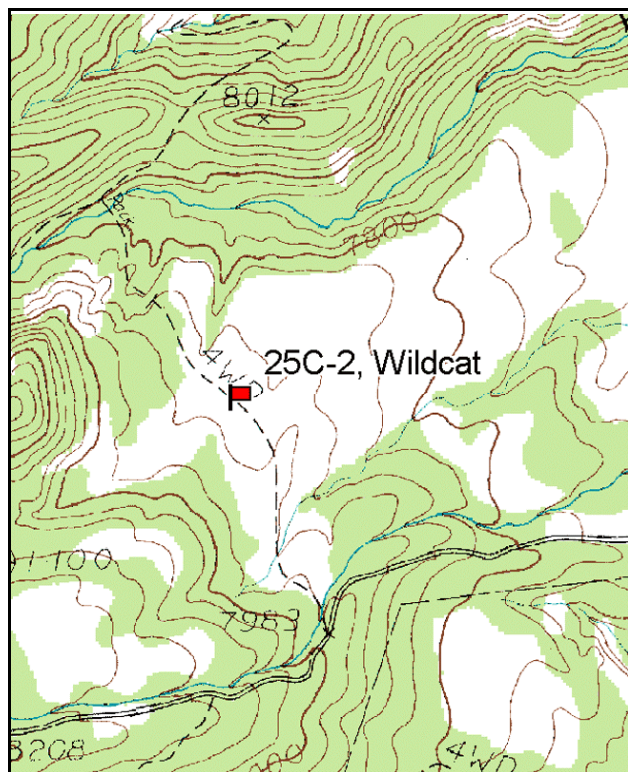
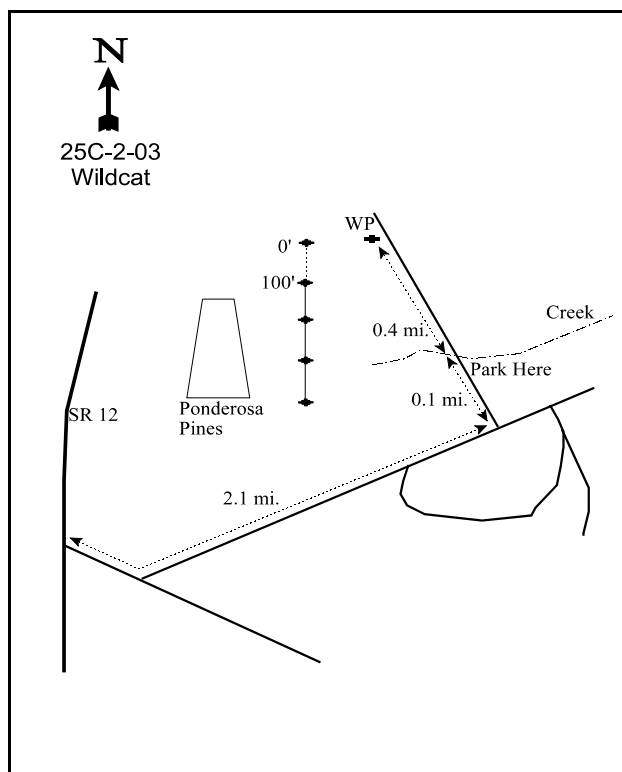
Vegetation type: Chained, Shrubland.

Compass bearing: frequency baseline 165 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

### LOCATION DESCRIPTION

On SR12 south of Torrey, go about 50 yards south of Pleasant Creek Campgrounds then turn east onto the Lower Bowns Reservoir Road. Proceed 2.1 miles and turn left. Continue 0.1 miles. From here the road is closed. Walk across the creek and down the ATV trail approximately 0.4 miles to the witness post on the left side of the road. The stakes are full-high fenceposts. The 0-foot stake is marked by browse tag #7116. Ignore the fencepost that was misplaced near the south end of the baseline.

Map Name: Lower Bowns ResTownship and Range Unsurveyed

### Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4217657 N, 473256 E

## DISCUSSION

### Wildcat - Trend Study No. 25C-2

The Wildcat study area was chained and seeded in 1970 and is now a sagebrush-grass type. This open flat is bordered by large ponderosa pine and scattered pinyon-juniper at an elevation of 7,900 feet. It has a slight slope to the northeast. The nearby DWR Wildcat seeding pellet group transect indicates that winter deer use varies considerably from year to year, with a low of <1 deer days use/acre in 1976-77 and a high of 43 days use/acre (106 ddu/ha) the next winter, 1977-78 (Jense et al. 1981). An average of 25 deer days use/acre (62 ddu/ha) was recorded between 1985 and 1990 (Jense et al. 1991). Some deer use occurs during the summer as well. Pellet group data taken along the study site baseline in 1998 estimated 17 deer, 45 elk and 33 cattle days use/acre (42 ddu/ha, 111 edu/ha, and 82 cdu/ha). Pellet group data from 2003 estimated 46 deer, 29 elk, and 41 cow days use/acre (92 ddu/ha, 58 edu/ha, and 102 cdu/ha). Most of the deer pellet groups appeared to be from late winter and spring use, while elk use appeared to be mostly from spring. About ½ of the cattle use was from the 2002 season while the other half was from 2003. Due to the high elevation of this site, the area is used during mild winters and as transitional range.

Soil at the site is moderately deep with an effective rooting depth of just over 18 inches. The surface is smooth, with few large rocks or pavement. Soil texture is a loamy sand which is slightly acidic (pH 6.4). There are some very small gullies through the area and some wind and water erosion was evident in 1991. Cover of bare ground is moderately high but well dispersed by perennial grass and litter cover. Erosion is not a problem on this site.

The key browse species is Wyoming big sagebrush which is the dominant and most abundant browse present. Some black sagebrush is also mixed in and is hybridizing with the population. All sagebrush was classified as Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) in 1994, but both black sagebrush and Wyoming big sagebrush were listed in the other readings. Density of Wyoming big sagebrush was estimated at 2,860 plants/acre in 2003, while black sagebrush numbered 880 plants/acre. These populations appear stable to slowly increasing with good young recruitment during most readings and moderate numbers of decadent plants. Vigor has remained normal on most shrubs during all readings. Utilization has been mostly light to moderate over the years with the exception of heavier use reported in 1991.

Broom snakeweed was also common in 1985 and 1991, but declined considerably in density in 1994. Gray horsebrush is also fairly common and has displayed moderate to heavy use since 1994. It appears to have a stable population of around 800 plants/acre. Slenderbush eriogonum also occurs in small numbers. It provides some additional forage and displayed heavy use in 1991 and 2003.

The grass composition is made up mostly of blue grama and seeded crested wheatgrass. Together they make up almost 100% of the grass cover. Crested wheatgrass is abundant and produces substantial amounts of forage especially in the spring since it greens-up early. Blue grama, a native warm season grass, is also quite abundant, but due to its low growing habit, provides limited forage. Both grasses are vigorous and lightly to moderately utilized.

The forb component is diverse, but only a few species occur more than occasionally. The most prominent forb species is silvery lupine which accounted for 92% of the forb cover in 1998. Due to drought conditions during the spring of 1994, production was limited with forbs combining to produce less than 2% cover and grasses only 15%. More normal precipitation patterns in 1997 and 1998 dramatically increased production doubling grass cover to 32% and increasing forb cover to 13%. A return to drier than normal conditions caused perennial grass and forb cover to decline in 2003 as well as sum of nested frequency values.

### 1985 APPARENT TREND ASSESSMENT

Soil trend appears stable. Cover will increase if grazing is closely regulated. There appears to be excessive camping and ORV use in the area which should be monitored to insure that irreversible soil and vegetation damage is not allowed. Vegetative trend appears upward with a healthy, moderately used, and diverse key species population. The increaser species do not appear to be increasing at unmanageable levels.

### 1991 TREND ASSESSMENT

In the last survey, it was noted that there was excellent basal vegetative cover, which has now gone down to only 10%. Percent bare ground has increased from 31% to 47%. This trend should be monitored closely for the soil trend would have to be considered down with this latest information. However, this could turn around quickly with a return to normal precipitation patterns. The browse trend would be considered up with the increase for sagebrush. The herbaceous understory would also be considered up slightly with a slight increase in nested frequency of perennial grasses. There was a slight decrease in the forbs, but they make up less than 10% of the herbaceous cover.

#### TREND ASSESSMENT

soil - down (1)

browse - up (5)

herbaceous understory - slightly up (4)

### 1994 TREND ASSESSMENT

Ground cover characteristics have improved since 1991 with percent bare ground decreasing from 47% to 35%. Litter has continued to decline. Trend for black/Wyoming big sagebrush is stable. Population density has declined slightly mostly due to the larger sample used in 1994. The decadence rate has remained low. Broom snakeweed and gray horsebrush have also declined significantly. Photos indicate a definite decrease in production of grasses since 1985, but the sum of nested frequencies for perennial grasses and forbs have remained fairly stable since 1991 indicating a stable trend. Spring precipitation in 1994 was only 59% of normal and is the primary cause for the decline in herbaceous production. Normal precipitation patterns will improve future production and cover values.

#### TREND ASSESSMENT

soil - up slightly (4)

browse - stable (3)

herbaceous understory - stable (3)

### 1998 TREND ASSESSMENT

The soil trend continues to improve as percent cover of bare ground declined from 35% to 28% and percent litter cover increased from 31% to 48%. In addition, vegetation cover more than doubled since 1994 from 25% to 55%. Erosion is not currently a problem on the site. Density of the combined black and Wyoming big sagebrush populations has declined slightly, but percent decadence is lower, vigor improved and utilization is mostly light to moderate. Recruitment is currently adequate to maintain the population. Trend is considered stable. Trend for the herbaceous understory is up slightly due to a slight increase in the sum of nested frequency of perennial grasses and a large increase in frequency of forbs. In addition, production increased dramatically since 1994, with cover of grasses doubling and cover of forbs increasing from 2% to 13%. The increase in forb cover and nested frequency comes primarily from silvery lupine.

#### TREND ASSESSMENT

soil - up (5)

browse - stable (3)

herbaceous understory - up slightly (4)

#### 2003 TREND ASSESSMENT

Trend for soil is slightly down. Relative percent cover of vegetation declined slightly while cover of bare ground increased. Relative percent cover of litter remained stable. Herbaceous production has declined 49% due primarily to 4 consecutive dry spring periods. Some localized erosion is apparent but not excessive and the erosion condition class was determined to be stable in 2003. Trend for browse continues to be stable. Density of Wyoming big sagebrush has increased slightly. Use remains light to moderate, vigor normal on most plants, and percent decadence moderate at 22%. Trend for the herbaceous understory is down. Sum of nested frequency of perennial grasses has declined 16% while cover dropped 46% (32% to 17%). Nested frequency of crested wheatgrass declined significantly. Since 1994, blue grama has provided an increasing portion of the perennial grass cover (23%, 59%, 61%) while crested wheatgrass has steadily declined (51%, 41%, 39%). This trend is most likely caused by a combination of early summer cattle grazing and drier than normal spring periods for the past 4 years. Sum of nested frequency of perennial forbs also declined and cover fell from 13% to 4%. Most of the change is due to a decline in the nested frequency and cover of silvery lupine. Several other perennial forbs are found on the site but they occur rarely.

#### TREND ASSESSMENT

soil - slightly down (2)

browse - stable (3)

herbaceous understory - down (1)

HERBACEOUS TRENDS --  
Management unit 25C, Study no: 2

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'94	'98	'03	'94	'98	'03
G	Agropyron cristatum	<sub>ab</sub> 268	<sub>c</sub> 302	<sub>bc</sub> 293	<sub>c</sub> 303	<sub>a</sub> 237	7.61	13.10	6.69
G	Aristida purpurea	-	-	-	3	3	-	.03	.00
G	Bouteloua gracilis	<sub>a</sub> 186	<sub>b</sub> 234	<sub>bc</sub> 255	<sub>c</sub> 282	<sub>bc</sub> 263	7.39	18.85	10.53
G	Sitanion hystrix	<sub>b</sub> 44	<sub>a</sub> 9	<sub>a</sub> 4	<sub>a</sub> 4	<sub>a</sub> -	.01	.00	-
G	Sporobolus cryptandrus	-	-	3	6	-	.00	.06	-
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		498	545	555	598	503	15.02	32.04	17.23
Total for Grasses		498	545	555	598	503	15.02	32.04	17.23
F	Allium spp.	6	3	-	2	-	-	.00	-
F	Antennaria rosea	3	3	-	-	-	-	-	-
F	Arenaria fendleri	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 27	<sub>a</sub> -	-	.15	-
F	Artemisia ludoviciana	-	3	-	-	-	-	-	-
F	Astragalus spp.	2	1	-	2	-	-	.00	-
F	Cryptantha spp.	<sub>a</sub> -	<sub>a</sub> -	<sub>ab</sub> 1	<sub>b</sub> 12	<sub>a</sub> -	.00	.02	-
F	Descurainia pinnata (a)	-	-	1	-	11	.00	-	.02
F	Eriogonum alatum	2	2	-	-	2	-	-	.03
F	Erigeron pumilus	9	5	-	3	-	-	.00	-
F	Eriogonum racemosum	<sub>a</sub> 12	<sub>b</sub> 25	<sub>ab</sub> 19	<sub>ab</sub> 25	<sub>b</sub> 29	.18	.26	.21
F	Gayophytum ramosissimum(a)	-	-	-	6	-	-	.01	-
F	Gilia hutchinifolia (a)	-	-	<sub>b</sub> 52	<sub>a</sub> -	<sub>a</sub> -	.19	-	-
F	Lepidium spp. (a)	-	-	<sub>a</sub> -	<sub>b</sub> 71	<sub>a</sub> -	-	.21	-
F	Lupinus argenteus	<sub>b</sub> 139	<sub>a</sub> 59	<sub>a</sub> 81	<sub>b</sub> 128	<sub>a</sub> 92	.94	11.93	3.35
F	Lygodesmia spp.	3	1	-	2	3	-	.00	.03
F	Oenothera pallida	<sub>a</sub> -	<sub>ab</sub> 2	<sub>ab</sub> 4	<sub>c</sub> 22	<sub>bc</sub> 17	.02	.23	.03
F	Orthocarpus luteus (a)	-	-	<sub>a</sub> 20	<sub>a</sub> 14	<sub>b</sub> 131	.08	.03	1.82
F	Penstemon spp.	<sub>ab</sub> 11	<sub>b</sub> 15	<sub>a</sub> 1	<sub>a</sub> 3	<sub>a</sub> 3	.00	.01	.00
F	Phlox longifolia	<sub>bc</sub> 28	<sub>c</sub> 46	<sub>bc</sub> 20	<sub>ab</sub> 6	<sub>a</sub> 3	.05	.02	.00
F	Polygonum douglasii (a)	-	-	<sub>a</sub> 2	<sub>b</sub> 26	<sub>a</sub> -	.00	.07	-
F	Sphaeralcea coccinea	-	4	2	1	1	.00	.00	.00
F	Tragopogon dubius	-	-	-	1	-	-	.00	-
F	Unknown forb-perennial	-	4	-	-	-	-	-	-
Total for Annual Forbs		0	0	75	117	142	0.28	0.31	1.84
Total for Perennial Forbs		215	173	128	234	150	1.21	12.67	3.69
Total for Forbs		215	173	203	351	292	1.50	12.99	5.53

Values with different subscript letters are significantly different at  $\alpha = 0.10$

#### BROWSE TRENDS --

Management unit 25C, Study no: 2

Type	Species	Strip Frequency			Average Cover %		
		'94	'98	'03	'94	'98	'03
B	<i>Artemisia nova</i>	0	17	21	-	1.29	1.64
B	<i>Artemisia tridentata wyomingensis</i>	92	79	75	9.67	6.50	10.67
B	<i>Chrysothamnus nauseosus</i>	0	1	1	-	-	-
B	<i>Chrysothamnus viscidiflorus stenophyllus</i>	3	0	4	.00	-	.18
B	<i>Eriogonum microthecum</i>	9	3	6	.09	.06	.04
B	<i>Gutierrezia sarothrae</i>	12	5	8	.07	.07	.18
B	<i>Leptodactylon pungens</i>	0	0	1	-	-	-
B	<i>Opuntia</i> spp.	2	0	9	.01	-	.03
B	<i>Pinus edulis</i>	0	0	0	.30	-	-
B	<i>Tetradymia canescens</i>	26	27	25	.45	.21	.41
Total for Browse		144	132	150	10.60	8.14	13.17

#### CANOPY COVER, LINE INTERCEPT --

Management unit 25C, Study no: 2

Species	Percent Cover '03
<i>Artemisia nova</i>	1.63
<i>Artemisia tridentata wyomingensis</i>	14.80
<i>Eriogonum microthecum</i>	.05
<i>Gutierrezia sarothrae</i>	.20
<i>Opuntia</i> spp.	.01
<i>Tetradymia canescens</i>	.13

#### KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 25C, Study no: 2

Species	Average leader growth (in) '03
<i>Artemisia tridentata wyomingensis</i>	2.0

POINT-QUARTER TREE DATA --  
Management unit 25C, Study no: 2

Species	Trees per Acre		Average diameter (in)	
	'98	'03	'98	'03
Juniper osteosperma	6	N/A	1.2	N/A
Pinus edulis	8	N/A	3.7	N/A

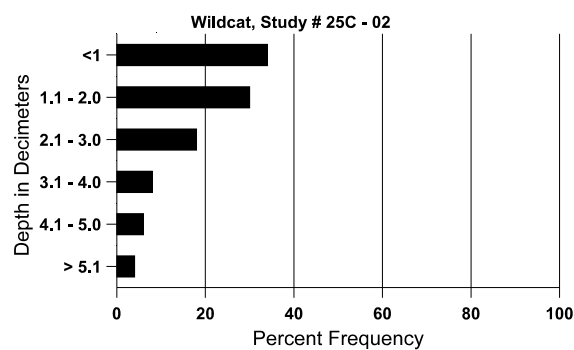
BASIC COVER --  
Management unit 25C, Study no: 2

Cover Type	Average Cover %				
	'85	'91	'94	'98	'03
Vegetation	19.50	9.50	25.40	55.13	36.59
Rock	2.00	2.75	1.31	2.17	1.34
Pavement	3.75	1.25	2.27	3.62	2.98
Litter	44.25	39.50	31.28	47.79	39.74
Cryptogams	0	.25	0	0	.63
Bare Ground	30.50	46.75	34.77	27.63	32.24

SOIL ANALYSIS DATA --  
Management unit 25C, Study no: 2, Study Name: Wildcat

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
18.4	63.0 (16.3)	6.4	82.0	9.4	8.6	1.2	13.6	91.8	0.6

## Stoniness Index



PELLET GROUP DATA --

Management unit 25C, Study no: 2

Type	Quadrat Frequency			Days use per acre (ha)	
	'94	'98	'03	'98	'03
Rabbit	28	17	27	-	-
Elk	41	41	27	45 (111)	29 (58)
Deer	32	31	39	17 (42)	46 (92)
Cattle	18	16	23	33 (82)	41 (101)

BROWSE CHARACTERISTICS --

Management unit 25C, Study no: 2

		Age class distribution (plants per acre)					Utilization				
Y e a r	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
<i>Amelanchier utahensis</i>											
85	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
91	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	0	25/37
98	<b>0</b>	-	-	-	-	-	0	0	-	0	40/52
03	<b>0</b>	-	-	-	-	-	0	0	-	0	36/41
<i>Artemisia nova</i>											
85	<b>1199</b>	666	533	533	133	-	0	0	11	0	14/13
91	<b>2199</b>	133	133	1933	133	-	21	0	6	3	11/18
94	<b>0</b>	-	-	-	-	-	0	0	0	0	-/-
98	<b>940</b>	140	260	520	160	40	47	2	17	2	14/21
03	<b>880</b>	-	-	780	100	20	34	2	11	2	14/22
<i>Artemisia tridentata wyomingensis</i>											
85	<b>5066</b>	200	1400	2666	1000	-	13	5	20	1	23/20
91	<b>5399</b>	-	733	3533	1133	-	58	21	21	5	15/21
94	<b>5320</b>	40	580	3400	1340	240	40	4	25	16	15/24
98	<b>2640</b>	100	320	1860	460	240	31	5	17	5	22/30
03	<b>2860</b>	-	100	2140	620	340	21	3	22	8	24/33
<i>Chrysothamnus nauseosus</i>											
85	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
91	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
98	<b>20</b>	-	-	20	-	-	100	0	-	0	-/-
03	<b>20</b>	-	-	20	-	-	0	100	-	0	-/-



		Age class distribution (plants per acre)					Utilization				
Y e a r	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
<b>Chrysanthamnus viscidiflorus stenophyllus</b>											
85	<b>66</b>	-	66	-	-	-	0	0	-	0	-/-
91	<b>133</b>	-	-	133	-	-	0	100	-	0	2/3
94	<b>80</b>	-	20	60	-	-	75	0	-	0	-/-
98	<b>0</b>	-	-	-	-	-	0	0	-	0	8/22
03	<b>80</b>	-	-	80	-	-	0	0	-	0	8/8
<b>Eriogonum microthecum</b>											
85	<b>132</b>	-	66	66	-	-	0	0	-	0	6/7
91	<b>333</b>	-	133	200	-	-	40	0	-	0	5/6
94	<b>500</b>	-	20	480	-	-	0	84	-	0	3/5
98	<b>240</b>	-	60	180	-	-	25	0	-	0	4/7
03	<b>220</b>	-	-	220	-	-	18	73	-	0	4/6
<b>Gutierrezia sarothrae</b>											
85	<b>4666</b>	-	1400	3266	-	-	0	0	0	0	10/8
91	<b>6332</b>	-	733	5466	133	-	1	0	2	2	6/6
94	<b>280</b>	-	40	220	20	-	0	0	7	0	5/4
98	<b>120</b>	40	-	120	-	-	17	0	0	0	10/8
03	<b>340</b>	-	-	320	20	-	0	0	6	0	7/7
<b>Leptodactylon pungens</b>											
85	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
91	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
98	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
03	<b>20</b>	-	-	20	-	-	0	0	-	0	-/-
<b>Opuntia spp.</b>											
85	<b>332</b>	333	266	66	-	-	0	0	-	0	2/5
91	<b>532</b>	1733	466	66	-	-	0	0	-	0	2/5
94	<b>40</b>	-	20	20	-	-	0	0	-	0	3/11
98	<b>0</b>	40	-	-	-	-	0	0	-	0	-/-
03	<b>400</b>	-	-	400	-	-	0	0	-	5	2/4
<b>Tetradymia canescens</b>											
85	<b>2666</b>	-	1333	933	400	-	3	0	15	5	7/7
91	<b>1999</b>	-	800	666	533	-	33	10	27	7	6/10
94	<b>800</b>	20	260	460	80	-	28	33	10	13	4/5
98	<b>820</b>	60	280	460	80	-	41	32	10	2	5/8
03	<b>880</b>	-	140	680	60	-	23	18	7	2	7/8